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"Scire est nescire, nisi id me Scire alius sciret."

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A REVIEW OF SEVEN HUNDRED CASES OF ACUTE APPENDICITIS.*

BY

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A VERY large proportion of the work of every general surgeon consists in the treatment of acute appendicitis, and these 700 cases represent those which have been under my care during the past eleven years at the Bristol Royal Infirmary and in private.

According to the reports of the Registrar-General, there are more than 3,000 deaths from this condition annually in this country alone, and the death-rate in the present series amounts to almost 5 per cent., so that it is well worth our while to consider why the mortality is so great and how it would be possible to reduce it.

Appendicitis is comparatively rare at the extremes of life. I have found an appendix abscess in a baby of 18 months, and I have seen one in the hernial sac

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of a man aged 91, though neither happens to come in the present series, among whom the youngest was aged 2½ years and the oldest 86.

Among the 661 whose ages were noted the incidence is as follows:—

First decade	63	Sixth decade	37
Second ,, ...	202	Seventh ,, ...	18
Third ,, ...	168	Eighth ,, ...	9
Fourth ,, ...	93	Ninth ,, ...	5
Fifth ,, ...	66		

Causes of Death.—There were thirty-four deaths, though not all of them are directly attributable to the disease with which the patient was admitted. One patient, for instance, was found post-mortem to be suffering from abdominal carcinoma, another died from diphtheria. Including the above, however, I find that twenty-four of the cases which died had been admitted with more or less extensive peritonitis, and that seventeen of these were so ill on admission that either they were not operated upon at all, or at most drainage was effected under local anæsthesia or with the aid of gas and oxygen. The other seven had an appendicectomy performed as well, and in the case of two of them an immediate drainage of the bowel was effected at the same time. In five of the remainder abscess formation had taken place. Of the remaining two, one was not operated upon. She was an old lady of 78, and her death was due to myocarditis. Mitral stenosis seems to have been the cause of the death of the last man, who died two hours after a perfectly straightforward and uncomplicated operation.

It would seem, therefore, that it should be possible almost to abolish deaths following appendicectomy if we could only get the cases early enough. In the

present series there are only three deaths in cases operated upon within the first forty-eight hours after the onset of symptoms. In all of these the appendix was gangrenous and had perforated, and the fact that I drained the peritoneum of all three indicates that peritonitis was present. In one of them the fatal result was due in large measure to my failing to secure complete hæmostasis. Bleeding into an infected peritoneum is a most deadly complication, and I believe it accounts for at least one other death among the present series. There are undoubtedly others who died as the result of technical errors on my part, *e.g.* two diabetics who were operated upon without preliminary insulin treatment, and at least two patients in whom I removed the appendix when it was associated with abscess formation, and in so doing broke down protective adhesions and set up a general peritonitis. The fact remains, however, that if every case of acute appendicitis came into the hands of the surgeon during the first twenty-four hours deaths from the disease would become a negligible quantity.

An acute case submitted to operation on the first day should be up and about in ten days' time. Even a mild case takes that time to get well without operation, and still has an appendix which is almost sure to give rise to further trouble.

Early Diagnosis.—One of the most important contributions to the study of appendicitis which has appeared of late is a paper by Professor D. P. D. Wilkie, of Edinburgh,[1] who maintains that we have been including under the one head of appendicitis two totally different pathological conditions. The one is an inflammation of the mucous membrane and wall of the appendix which commonly subsides

spontaneously in time, and at worst rarely does more than lead to local abscess formation. The other is an acute obstruction of the lumen of the appendix, generally by a fæcal concretion. It leads to a condition analogous to acute strangulation of a loop of gut, *i.e.* the lumen is distended with intensely poisonous decomposing intestinal contents, the wall rapidly becomes gangrenous and may perforate within twenty-four hours. No defensive adhesions have had time to form, and when the wall gives way the peritoneum is flooded with the most deadly infective material. Acute peritonitis rapidly follows, and it is this class of case which accounts for the majority of deaths. Every surgeon of experience must admit that all the above statements are perfectly correct.

Wilkie further maintains that the two conditions are clinically distinguishable. According to him, appendicitis proper begins with abdominal pain of gradually increasing severity, possibly some vomiting, a dirty tongue, and a steadily rising pulse and temperature. The obstructed appendix manifests itself by more intense pain, umbilical or epigastric in situation and colicky in nature. Vomiting is profuse. Pulse and temperature remain normal until perforation occurs. The symptoms, in fact, like the pathology, are those of acute intestinal obstruction.

For the past year or more I have been trying to distinguish these two conditions clinically, and I cannot do it. Some cases are true to type, others are not. The pain of an acutely inflamed appendix may be just as intense and its onset as sudden as that of an obstructed one, though the pain is apt to be more constant and less spasmodic. In some of my obstructed cases there has been remarkably little pain and little or no vomiting. Temperature and pulse are commonly

quite low in the inflammatory cases during the first day—that precious twenty-four hours during which it is all-important that the diagnosis should be established. On the other hand, I have had gangrenous cases starting off with a rigor and a temperature of 103°, or with temperature and pulse rising steadily as in an inflammatory case.

One very important point emerges, however, viz. that it is quite common to have a gangrenous appendix on the point of perforating, yet for the patient to have a perfectly normal temperature and pulse. Pain and vomiting may have disappeared with the onset of gangrene. The patient, especially if a child, may have dropped off to sleep, so patient, friends, and doctor may well be in a fool's paradise till the appendix perforates and signs of peritonitis supervene. I saw one such case recently.

A small boy had been off colour for several days. On the previous day he had had some pain, though not severe, and had vomited once. During the day upon which I saw him he had had pain and tenderness in the right iliac fossa, and his pulse and temperature had been steadily rising, though the evening temperature was barely 100°. When I arrived the boy was asleep. Everything seemed to point to a mild inflammatory case. On principle I insisted upon bringing him in from the country and operating the same night. The appendix was gangrenous, oozing pus, and on the point of bursting. He had a stormy convalescence, and I doubt if he would have lived had he been left till the following day.

The general practitioner sends most of his appendix cases into hospital now as soon as he diagnoses them. As a consequence we see far fewer cases of general peritonitis than we did even a few years back. When we do see them they are generally due either to the patient not sending for a doctor early enough, or to failure of the doctor to diagnose the case as one of

appendicitis until it has become one of peritonitis. I am quite certain that this failure is usually due to the fact that many practitioners are loth to diagnose appendicitis until a case presents all the signs and symptoms of the text-book description, particularly pain, tenderness, and rigidity in the right iliac fossa. Now the old text-books did not describe a case of appendicitis at all. The description applied to a case of localized peritonitis in the right iliac fossa. Rigidity in particular is never found until the peritoneum is affected. If we wish to lower our present death-rate we must endeavour to diagnose our cases before peritonitis has appeared.

In acute appendicitis no one sign or symptom is invariably present. Pain is almost always the first and is certainly the most constant symptom, though there is sometimes a history of malaise for a few days beforehand. The pain is usually referred to the umbilicus or epigastrium. Occasionally, especially in recurrent cases, it commences in the right iliac fossa. Exceptionally it may be referred to other regions, *e.g.* the loin, the groin, or even to the left side. Its degree of severity is very variable. I have seen it begin with the most intense colic, leading to collapse with a subnormal temperature. It is usually fairly bad, and yet not very uncommonly patients stroll up to the Casualty Department with a large appendix abscess from whom it is quite hard to elicit any history of pain whatever, and who may never have left their work. Absence of pain is most common in the very young, the very old, and in the mentally deficient.

Nausea is the next most common symptom, and vomiting occurs in three-quarters of the cases. Though constipation is the general rule, it is by no means constant, and it is well to remember that diarrhœa

occurs in 5 per cent. of all cases. Diarrhœa is particularly common in cases where the appendix is situated in the pelvis, doubtless as the result of the local irritation it produces there.

No reliance can be placed upon pulse or temperature. The latter is rarely above 100° during the first twenty-four hours, and although one does occasionally find it higher than this, a temperature of 102° or more, even in a child, should make one very doubtful of the diagnosis.

It is quite exceptional to find a clean tongue, and I lay a good deal of stress upon the presence of a dirty one.

Pressure *over the appendix* almost always causes some pain, but this does not mean that one can elicit pain by pressing in the right iliac fossa. It is true that a good many appendices are to be found in this region, but a great many are tucked up behind the cæcum. Many more dip over the pelvic brim or are situated well within the pelvis, while exceptionally one may be found right up under the liver or even on the opposite side of the abdomen.

Past History.—It is remarkable how many cases which come to operation give a history of previous attacks of appendicitis. This is particularly the case in gangrenous appendicitis. Where the notes are reasonably full I can hardly find any such cases which failed to give either a definite history of previous attacks of appendicitis or of recurrent attacks of "indigestion," "biliousness," "gastric influenza," or abdominal pain which has masqueraded under some such label. It is extremely unlikely that a stricture and a fæcal concretion will be found in an appendix which has never been the seat of some inflammatory attack. This is a strong argument in favour of removing

every appendix before it gets the chance of becoming inflamed a second time, however slight the first attack may be.

In every case of acute and persistent abdominal pain think first of appendicitis, and continue to regard this as the cause until you can definitely prove it to be something else. A dirty tongue and tenderness on deep pressure in any of the places where an appendix may be situated are the surest confirmatory signs in early cases. Do not wait for any others to appear if they do not happen to be already present.

Pelvic Appendicitis.—If the appendix were never to be found below the brim of the pelvis I am confident that considerably more than half of the deaths from appendicitis would be avoided. Apart from death, patients would be spared a vast amount of avoidable illness. Almost all the cases of general peritonitis admitted to hospital at the present time are of this ass. My notes show twelve of the thirty-four deaths as being due to pelvic appendicitis, and the number was undoubtedly greater, for the position of the appendix is only noted in a small proportion of cases. Time and again one gets the history that the doctor suspected appendicitis, but could find no signs in the abdomen. Of course not; there were no signs to find. So few realize that the appendix does not always inhabit the right iliac fossa, and that absence of abdominal signs in a case otherwise suggestive of acute appendicitis should indicate the imperative necessity for making a pelvic examination.

Apart from deaths and acute disasters due to gangrenous or suppurative pelvic appendicitis, the mild case which subsides in due course often infects the Fallopian tubes in the case of women, and is the origin of many cases of chronic backache and

dysmenorrhœa. The gynæcologists remove almost (if not quite) as many chronically diseased appendices as the general surgeon does.

In this series I find nineteen cases of pelvic abscess. One burst spontaneously per vaginam and another per rectum. The rest I opened also per rectum. This is infinitely the best way of dealing with a localized pelvic collection and seems to be Nature's method also. It is much less dangerous than trying to get at it from above, and the drainage is more satisfactory. When the abscess approaches the rectum it causes rectal irritation, which manifests itself by the passage of numerous small stools containing mucus, and the abscess can then be evacuated easily and without danger.

Treatment.—The presence of an abscess rarely necessitates an immediate operation. When one is small and inaccessible it is better left alone. It will either come near the surface in time or it will burst into the bowel and cure itself. This is especially the case with deeply-placed residual abscesses. An operation which necessitates the separation of softened and adherent coils of gut may readily lead to a fæcal fistula, while it is difficult to effect satisfactory drainage.

An abscess rarely bursts into the general peritoneal cavity, though this did occur in one of the cases under review. She was admitted profoundly collapsed, with a temperature of 95° and a rigid and dull abdomen. A large abscess which had been wrapped round with omentum had suddenly flooded the abdomen with thick, yellow stinking pus. I removed the appendix and a good deal of omentum and swabbed up the pus, and the child made a perfectly uneventful recovery.

Retrocæcal Abscess.—The commonest site for an abscess is behind the cæcum and ascending colon.

The reason for this is that the retrocæcal appendix, being away from the peritoneal cavity, sets up no muscular rigidity when it is inflamed. Abdominal examination will only elicit pain when deep pressure is made over the ascending colon, and hence these cases are missed in the early stages. Missing a case of this kind does not matter so much as in the pelvic type. Such an one rarely sets up a general peritonitis. Still, once an abscess has formed several weeks are likely to be wasted in convalescence, and the chance of performing a clean appendicectomy has been lost.

Errors in Diagnosis and Treatment.—Of errors in diagnosis I will briefly mention only a few of the most common. Cases sent in to hospital labelled appendicitis are often found to be: (1) Renal infections and most commonly acute pyelitis; (2) acute cholecystitis; (3) early chest trouble, particularly basal pneumonia and diaphragmatic pleurisy; (4) (much less commonly) infective gynæcological conditions such as pyosalpinx.

A case which really is one of acute appendicitis is rarely sent up labelled anything else, though I have myself diagnosed a ruptured appendix as a perforated duodenal ulcer and a case of high retrocolic obstructed appendix as one of renal colic.

Of errors in treatment much the most common is the giving of a purge. The general public has a great belief in castor oil as a remedy for every abdominal pain, and I regret to say that many doctors prescribe the same popular treatment. For a case of commencing appendicitis nothing could possibly be worse, and castor oil must be responsible for a number of deaths every year. If you must try to get the bowels open in a case of possible early appendicitis, a suppository or a simple enema is the only permissible method to employ.

SUMMARY.

If every case of acute appendicitis could be operated upon during the first twenty-four hours deaths from this disease could be almost completely abolished. At the present time most deaths are due to delay in diagnosis and treatment. The fault often lies with the patient who, when he has abdominal pain, sends for castor oil instead of for a doctor.

The commonest mistakes of the general practitioner are :—

(1) He knows that most cases subside if left alone, and so he waits till he finds that this particular case is not doing so. In consequence, he may sacrifice the patient's life or cause him many weeks of invalidity.

(2) He waits to make a diagnosis until signs of peritonitis have supervened, thus missing the most favourable time for operation.

(3) He does not know that pelvic appendicitis is common, produces no abdominal signs till very late, and can only be definitely diagnosed by rectal examination.

Of these three the last is nowadays the most frequent and fatal error. Gangrenous pelvic appendicitis accounts for most of the deaths, and it will continue to do so until a rectal examination becomes the invariable rule in every case of possible appendicitis in which physical signs are lacking in the abdomen.

In the most dangerous type of appendicitis (the obstructed variety) temperature and pulse frequently remain unaffected until perforation has taken place and all chance of performing a clean appendicectomy has gone. Early or late, once a case of appendicitis has been diagnosed it should be removed to a hospital

or nursing home, and it should be left to the discretion of the surgeon whether an immediate operation is necessary or not.

My advice to a young surgeon would be: "Operate upon every case of acute appendicitis at once, with the exception of those which are seen late and already show signs of localized tumour formation. In those hold your hand until the attack has entirely cleared up or until an easily accessible abscess has formed. An early case with tumour formation requires operation, being due to omentum wrapped round an inflamed appendix. In draining an abscess do not try to remove the appendix if by so doing you run any risk of breaking down protective adhesions. Always make certain that you have secured absolute hæmostasis before you close your wound. When peritonitis makes drainage a necessity avoid putting tubes in amongst coils of intestine. It will usually suffice to put them down to or only just inside the peritoneum."

I have had many fewer cases of obstruction since adopting this method. When a patient is very ill with general peritonitis the less one disturbs the intestines the better. Drainage under a local anæsthetic or with the help of gas and oxygen and followed by the Fowler position, starvation, rectal subcutaneous or intravenous saline, and plenty of morphia gives better results than follow more extensive and radical operations. The mortality in such cases is bound to be high whatever the treatment adopted, and our one hope for better results than we are now getting lies in earlier diagnosis and earlier operation.

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THE WORK OF THE UNIVERSITY CENTRE OF CARDIAC RESEARCH, 1927–31.

BY

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IN 1926 a Sub-committee of the Science Committee of the British Medical Association, appointed "to inquire into the steps which have been, and are being, taken in relation to the prevention, detection, and treatment of cardiac disease in children, and to make proposals in connexion therewith," and presided over by Sir Humphry Rolleston, Bart., decided to institute inquiries into the environment in which juvenile rheumatism was most prone to develop. One of these inquiries, it was thought, should concern itself with an area that included a wide variety of social and geographical conditions, and it was decided that these requirements would be met by taking Bristol as a centre and the three counties of Gloucestershire, Somerset and Wilts as the periphery. The writer, who was a member of that Sub-committee, accepted the responsibility of organizing this inquiry, the initial stages of which were made much easier by the kind offices of Sir Humphry Rolleston and the Secretary of the Sub-committee, Dr. Reginald Miller. Thanks to these, a grant in aid of clerical expenses

was secured from the Medical Research Council, and valuable advice and help were also given by Sir George Newman.

Next, it became necessary to secure premises to serve as an office and incidentally as a laboratory and a clinic. These were generously provided by the Bristol General Hospital Committee in the octagon room on the first floor, a room used for nurses' cubicles until the opening of the Susan Britton Wills Nurses' Home set it free, but remembered by an older generation as the Hospital Chapel. This was equipped by a loan from the University of Bristol, and at their wish entitled "the University Centre of Cardiac Research." The necessary technical assistance was secured through a generous grant from the R. L. St. J. Harmsworth Trust, and a Colston Research Scholarship enabled us to secure the services of Dr. Bruce Perry. The Centre was formally opened by Sir Thomas Horder, Bart., in March, 1927, and has occupied itself in various researches now about to be briefly described. Names are omitted, but the writer wishes here to express his deep indebtedness to the Medical and Nursing Staffs as well as to the administration of the Hospital for their continued interest and help.

Field Research into the Conditions favouring the occurrence of Rheumatic Heart Disease in Childhood.— The steps taken to organize this research have been detailed from time to time in reports to the *British Medical Journal.* The most recent of these, a report briefly summarizing results as far as this has been possible, has recently been issued by Dr. W. G. Savage,[1]

and there is, therefore, no need to recount the means by which this inquiry was set in motion. All that need be said here is that it has enjoyed the services of over 200 medical practitioners—general practitioners, medical officers of health, school medical officers, and physicians — and that it has been to those concerned in it a signal proof of the capacity of the medical profession to work together in a voluntary organization.

As the inquiry is not yet complete, we must claim only one fact as established. That, however, is so striking as to take a prominent place among the few things that we know for certain about the causation of rheumatic heart disease. It has shown us that during the three years under review (1927–30) Bristol's population of about 400,000 included 750 children with this disease, while the surrounding country with about 1,100,000 inhabitants had 350 of these children. In other words, the incidence in the city was six times as high as in the country. This fact has been carefully examined and tested for errors, but nothing can be found to upset the broad conclusion just stated. Steps are already being taken to see whether Bristol is singular in this respect, or whether the other great cities of Britain are similarly afflicted; while it is obvious that further inquiries must be made to discover, if possible, what are the reasons for this striking disparity of incidence.

Histological Studies.—(*a*) *Rheumatic Heart Disease.*—As a good deal of the work done on this subject was already completed, and indeed published before this Centre came into being, it would be scarcely fair to

claim the whole of it as an outcome of the Centre's activities. It is, however, true that its work has confirmed and extended the conclusions already drawn. In particular, the view that had already been put forward, namely that the infective agent enters the cardiac tissues by way of the coronary blood-supply, has been supported by observations of the state of the main trunks of the coronary arteries themselves [2] and of the root of the aorta.[3] Both these areas are damaged by the infection in a majority of cases.

Here we may, perhaps, mention other inquiries made, or in progress, as to lesions of other organs in acute rheumatic infection. One paper on abdominal manifestations [4] supports the view that the peritoneum is occasionally attacked, and work on pulmonary lesions in acute rheumatism and on the distribution of the cerebral changes in chorea is in progress.

(*b*) *Ulcerative Endocarditis.*—Though we have not yet published anything immediately bearing on these infections of the heart, the view already stated, to the effect that we have in this disease an infection of the inner surface of the heart and not of the heart wall itself—an " accidental " implantation of bacteria from the intracardiac blood-stream—has been substantiated. The conclusion to which we are irresistibly driven is that ulcerative endocarditis is for the most part a " terminal " infection, *i.e.* a lesion the very occurrence of which is unfortunately sufficient proof in itself of a fatal failure of resistance, either local or general or both. It cannot be cured, and only very seldom arrested. The only hope lies in prevention of those infections and other agencies which by damaging the

endocardium, or letting in an unusual dose of some other virus, lead up to the fatal implantation.

Cardio-Aortic Syphilis.—Examination of clinical and histological material led to conclusions[5] which have a bearing not only on the prognosis and treatment of the cardiac lesions but also on the nature of the syphilitic process. It became clear that the view which regarded the heart as one among many organs which, having been saturated by a blood-borne spirochætal infection, suffered damage from an invincible remnant of spirochætes, must be discarded. Apart from gummata—rarely seen in the heart—the only lesion is an aortitis, which injures the heart, not only directly by depriving it of the help that it is entitled to expect from the aortic elasticity, but also by infiltrating the bases of the aortic cusps, which are thereby rendered incompetent, and by narrowing the mouths of the coronary arteries and thus starving the myocardium.

The aortic lesions are lymphogenous, and not hæmatogenous. The virus—whether spirochæta or toxin or both—is brought to the aortic wall by the lymphatics which surround it. From this and from clinical considerations it seems clear that the last phase of the infection, whether it concerns the aorta or the cerebro-spinal axis, or both, is a lymphatic phase. More than that it would be improper to say here, as this is not the place for conjectures.

Other Infections. — Specimens of staphylococcal infection of the heart, of the pericarditis terminating renal disease, and of other infective lesions, have been examined. The first appears to be primarily a

focal necrosis of the myocardium which may extend to either of the serous layers. The second, contrary to what one might have expected, seems to be plastic rather than purulent.

Course and Treatment of Cardiac Infections.—As a beginning has been made with the treatment of juvenile cardiac rheumatism by what may be called "sanatorium" methods at Winford, it is probable that we shall learn a good deal about ways of distinguishing between activity and quiescence. In the meantime we have tried to discover criteria of activity by means of (*a*) leucocyte counts[6] (*b*) electrocardiography. (This latter investigation entailed a "control" one on children of the same age with normal hearts, the results of which are being published.) It has, however, proved impossible to discover any reliable index of active carditis by these methods. Repeated skiagraphic examinations were also made. These studies are being continued at Winford, and are, therefore, not yet concluded.

A summary has been made of the various means employed in the treatment of ulcerative endocarditis, and although this has not disclosed any new facts, it will be published by way of illustrating the various methods of attack that have been attempted.

The Ætiology of Cardio-Vascular Disease.—From the time of its opening the Centre has classified its clinical case records, so far as cardiac disease is concerned, under ætiological headings. The purpose of this was to discover the relative importance of the various morbid influences causing cardiovascular disease. Recently the data thus accumulated were

summarized, together with those derived from private practice, and the results formed the basis of a discussion at which similar analyses of experience in other great cities were compared. No gross discrepancies were brought to light. The Bristol figures are set out in the following table:—

Incidence of Chief Kinds of Organic Disease of Heart expressed in Percentages.

Type.	*Clinical.*			*P.M.*
	Private.	*Hospital.*	*Total.*	
Congenital ..	1·5	2·1	1·7	0·6
Rheumatic ..	21·1	55·8	31·7	24·6
Syphilitic	3·3	8·0	4·6	12·7
Endocarditis ..	4·9	8·1	5·9	13·0
Thyrotoxic ..	6·3	8·1	6·9	0·3
Hyperpietic with Decrescent ..	57·3	13·7	44·0	46·8
(Systolic B.P. over 200) ..	14·8	2·9	11·2	6·7 Cardio-renal

The small proportion of cases ascribed to *congenital defect* is, perhaps, not quite a faithful reflex of the truth. Experiences[7] in a clinic attended by children from the public elementary schools of Bristol have shown that in a school population of about 55,000 there are 116 children who exhibit signs of congenital cardiac anomaly. As only 8 per cent. of these displayed any disability, it is possible that many cases are also overlooked among children not examined medically as a matter of routine. Congenital heart disease has an importance beyond that of the mechanical consequences of the defects, since these are so often the basis of an endocardial infection.

A short paper[8] has been published in which attention has been drawn to the cardiac failure which may terminate *spinal deformity*, the link between the two being furnished by the effects of the deformity on the great vessels which compose the pedicle of the heart.

Another inherent factor of disease that has been examined[9, 10] is that by which the *coronary arteries* of certain families and individuals undergo premature degeneration. The importance of such inquiries is obvious when the apparent increase in the incidence of cardiac infarction is considered. The ætiology of this syndrome has been used[11] to throw light on the meaning of anginal pain and to support the view that this is an ischæmia of the cardiac muscle, usually coronary in its origin.

The importance of *syphilis* as a cause of cardiovascular disease has been noted above. Comparisons indicate that it is rather less important in Britain than on the Continent of Europe and in the United States of America; partly, no doubt, because it is in this country diluted by an excessive number of cases of rheumatic heart disease.

Another of the routine practices of the Centre which has harvested a wealth of knowledge that may be of use some day is that of cutting, in every heart examined, sections of a number of blocks from different parts of the heart. These include the principal portions of the sinu-auricular node and of the auriculo-ventricular bundle.[12] It is a practice that may conceivably furnish a basis for studies in cardiac localization similar to those which have been so

fruitful in the brain and spinal cord. We have plenty of material for this kind of work, waiting for someone to use it.

This last remark brings us to a consideration of the future of the Centre. Opened in 1927, on the understanding that the premises used would be available for three years, it is now "carrying on," but steps are being taken, in concert with the Professor of Medicine in the University, to implement the understanding that has existed since its foundation, that it should always be regarded as a part of the Department of Medicine. The chief difficulty by which we are now faced is the inadequacy of that Department. It has no premises in any of our hospitals, and in fact it would be difficult to place it in any. Now, however, that union between our chief hospitals is being accomplished through the medium of the Hospitals' Council, the foundation of a University Hospital, or system of hospitals, with adequate academic departments, is in sight. The Department of Medicine should, perhaps, come first, not only by virtue of seniority, but also and more especially because it is practicable. The building of a block to accommodate medical patients from both Infirmary and Hospital, that will be begun at Winford as soon as funds have been collected, ought to include provision for a department of medicine. The opening of this would furnish a fitting celebration, not only of the centenary of the Bristol Medical School, but also of that of the Bristol General Hospital, and of the bicentenary of the Bristol Royal Infirmary, since it would both commemorate the historical associations of these

three, and inaugurate a new era in the life of the Bristol School of Medicine. It might, for example, be possible to arrive at an understanding by which the past and present students of that School agreed to provide the necessary equipment, if the personnel were found by the University and the premises by the Hospitals' Council. Some such provision must be made for research in medicine, and it is in the achievement of this object that the University Centre of Cardiac Research hopes to find itself absorbed.

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STERILIZATION OF THE UNFIT.*

BY

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THE subject of sterilization has been so much in the public eye of late that it may be as well to consider whether there are likely to accrue any real benefits from adopting it as a method of dealing with a certain class of case. I do not propose to give my own views as to the utility of it, as (to tell the truth) they are still fluid; but rather is it my intention to give some of the arguments both for and against its adoption, and to try and gather what the general opinion of the profession in Bristol is.

This subject must be considered from the religious, legal, ethical, scientific and social aspects before any definite conclusion can be arrived at as to whether powers should be obtained to legalize such an operation.

The *religious* point of view need not detain us long. The Roman Church is, as one would expect, dead against it. The view taken by it is that we have no moral or religious right to interfere with the procreation of children, or in any way to prevent any man or woman becoming a parent. The one exception is that if it is necessary for the health of a man or woman that a diseased organ should be removed, which is incidentally one of the organs of generation it is permissible. But it must be for that definite

* Communicated to the Bristol Medico-Chirurgical Society, 13th May, 1931.

purpose, and not for the purpose of preventing procreation. The other churches have not spoken so definitely; indeed, judging from the findings of the Lambeth Conference it would appear that no objections would be raised by the Anglican Church as a whole, though this is probably not true of all its individual members. The attitude of the Churches must, however, be taken into account, if the profession or the public should ever apply to Parliament for the legalization of sterilization.

The *ethical* position is a more difficult one. It is to some extent linked up with the religious. Do we consider that we have a right to mutilate our fellow-creatures? Are we justified in subjecting them to the risks of operation? Do we think that we have a right to say to anyone: "Thou shalt not breed"? Have we the right to say to any woman: "Thou shalt not enjoy the joys of motherhood"? Have we any ethical right to say to any man: "Thou shalt not have the pleasures of a family life in a home of thine own"? Then is it wise to let loose a number of women, who are in no danger of motherhood, and who would possibly have no motives for chastity? Would they not be in great demand among men of a certain type, and thus become carriers of venereal disease? Also I would ask, in a more tentative way, would not sterilized men be in request among women of a poor moral type? I know that the Eugenic Society maintain that such men are not attractive to women; this may be so, but safety might well give an attraction which the man himself had not. It is suggested that efficient guardianship would reduce these risks to a minimum. I wonder how these efficient

guardians would set about making their guardianship efficient ?

The *legal* position is very definite. The law says very plainly that sterilization, *quâ* sterilization, is illegal, and that mutilation is an offence. The British Medical Association took the opinion of counsel on this question of legality. Sir Travers Humphreys gave his opinion in the following terms :

" I am clearly of opinion that any medical man who performs the operation described upon a defective within the meaning of that term, as defined within the Mental Deficiency Act 1913, would in the present state of the law be acting illegally and without any legal justification. I assume the consent of both parents and the excellence of the motives of all concerned, but the fact remains that the operation of sterilization involves an assault upon and the wounding of the person operated upon. The only legal justification for such an action in regard to a person who, either from extreme youth or old age, or from any other cause such as mental weakness, is incapable of giving a reasoned consent, would be that the operation was necessary to the health or well-being of the patient. I do not gather from the case that it is contended that sterilization would improve the condition, physical or mental, of the defective.

" The legal risks involved in such an operation would attach equally to all persons concerned—the doctor who performs it, and the parent or guardian who requested or sanctioned it.

" The doctor would have, in my opinion, no answer to an indictment for the offence of unlawful

wounding contrary to Section 20 of the Offences Against the Persons Act 1861."

This is only a portion of the written opinion, but the rest strengthens and supports what I have extracted from it. As to the question of voluntary sterilization, Lord Riddell is of opinion that this would be equally illegal. Such, then, is the legal position of sterilization as the law stands at present.

I now come to the *social* side. It is of every bit as much importance as the scientific side; in fact, it may well be that the social is the most important aspect of the whole question. There cannot be any doubt that incidental sterilization, such as may be necessary for the removal of disease or for the saving of life, is not only justifiable but imperative. There is, however, another class of case, where the answer is not so clear. Are we justified in sterilizing a woman because her mental health would be endangered by pregnancy? If a woman has suffered from mental disease after each confinement, would sterilization be a justifiable operation? I feel inclined here to make an exception to my intention of not expressing my own opinion. Such a course seems to me to be quite a proper one, since every mental attack following each successive parturition leaves the woman at a lower mental level, until eventually there is a risk of complete dementia. No doubt abstinence is the right course. Failing that, contraceptives might be employed, but even here there is a possibility of accidents happening, which may endanger the sanity of the patients.

It has been urged that sterilization of defectives would effect a great saving of expenditure by local authorities, in that there would no longer be any

necessity to erect and maintain institutions for these cases. Here there is a grave danger. If we are to have sterilization with that idea in view, we shall find ourselves in a predicament. We should still have with us a considerable number of persons at large who are now safe in public institutions—safe as regards not only their own but also the public safety. Many of these persons, if not almost all who are already in institutions, are quite unable to earn their own living or to take proper care of themselves, and institutional treatment would still be required for them.

I have already discussed the moral, or perhaps I should say the immoral, side of the question under the ethical aspects. And we must admit that this has a social as well as an ethical side. It seems that it is as objectionable from the social as from the ethical. We do not want to do anything which will add to the natural immorality of a certain section of the community.

We now come to the *scientific* side of the question. Sterilization has been chiefly pressed for as a means of preventing, or at least limiting, the number of mental defectives, which is at the present time stated to be on the increase. I do not for a moment say that it is not on the increase, I am not in a position to make any definite statement on this subject. It is argued that if mental defectives were sterilized, mental deficiency, even if not stamped out, would at least be greatly reduced.

There are, however, several difficulties which have to be overcome. What classes of defectives is it suggested should be sterilized? If the answer is "all," then we may ask what is the use of sterilizing

an idiot who does not breed? It must remain necessary that he should be dealt with either in an institution or under very efficient guardianship, since according to the statutory definition he is a person who is unable to protect himself against common physical dangers. He is able to do nothing for himself, not even capable of defending himself against an ordinary blow. He cannot feed himself. Next in order we have the various grades of imbeciles. These are very unlikely to breed, and cannot read, write or understand the value of money. They are quite unable to provide themselves with the ordinary necessaries of life, and must be detained in an institution for their own protection, if there is not very efficient guardianship. The lower grade imbecile cannot fend for himself, he is often vicious, and unfit to be at large. We now come to the higher grades—the mental defective, and it must be for these and these alone that sterilization can be asked for. Again, at what age is it suggested that this operation should be performed?

It must be remembered that in childhood there has not been complete development of the mind any more than there has been of the body, and that at puberty a mental defective may either show signs of rapid deterioration, when sterilization would be a work of supererogation, as institutional treatment, or effective guardianship, is essential for his own safety. On the other hand, at that age there may begin a distinct improvement in his mental activities, and in such cases sterilization would be unjustifiable. Then, again, we shall have to decide on the grade of deficiency that we consider would justify such an operation. How are we to arrive at that? What may appear

to be defective in one grade of society might possibly pass as normal, or even above normal, in others. We must admit that the surroundings in which a mental defective is brought up may to no small extent affect his mental state. Herd,[1] in his book, says: "When native intelligence is not fostered by a normal contact with the outer world of persons and events, both it and specific capacities do not develop as they should normally, and certain capacities may even atrophy to a greater or less degree." Also:[2] "The mental ratio of a normal child whose education, either formal or natural, is seriously interfered with is liable to fall, and usually does fall."

Again, quoting from Herd's work: "Dr. Lewis, in his report on his own survey, says that for every defective there are two or more others only slightly higher in mental and educational capacity, and at a mental welfare conference, held just after the issue of the report, he stated that for every defective there were ten others subnormal, that is, enough to make them relatively and in various degrees incapable of coping with the elementary school curriculum."

It seems quite obvious from the above quotations that the question of what defectives shall be sterilized and what shall not be is by no means an easy one. Nor are we in a position to say to what extent, if any, are these various degrees of mental deficiency hereditary. They may all be hereditary. If so, is it proposed that all persons showing some incapacity of imbibing knowledge or exercising wisdom and prudence are to be subject to sterilization? I admit that the compulsory sterilization of all such, as well as all physical degenerates, is certainly Utopian, but

it can hardly be considered as practical in the present time.

Once more, are we to sterilize those who are educationally defective, but who are quite capable of earning their own living. Or are we to advise it only for those who are socially defective, that is, those who, though showing some power of imbibing knowledge, are yet incapable of adjusting themselves to modern civilized conditions, including the erratic genius who has much wit and power in some directions, and yet is quite unable to adjust himself to his surroundings and so earn his own bread ?

But supposing we can arrive at some definite standard, it does seem to me that it will have to be a very low standard. What, may I ask, is the standard, not of education, but of mentality of the greater proportion of the inhabitants of these islands of ours ? Is it not a very low one ? Are we to take our standard from the universities, from our professional classes, from our public schools ? Or are we to take them from the elementary schools ? It seems to me that some standard, low or high, must be taken, and the same standard adopted for all classes. I refer you once more to the quotations I have taken from Dr. Herd's book. It does appear that what may be taken as a high standard for some classes would be a very low one for others.

Those who advocate sterilization maintain that the result of it would be to diminish the incidence of mental deficiency, and believe that in the course of years this incidence would be much reduced. This argument is based on a belief that mental deficiency is hereditary on Mendelian principles. It is for these

advocates to produce some sort of proof that their theories are correct. At present there is very little evidence that can be produced. I do not think that I can do better than quote from a brochure published by the Eugenics Society,[3] a very moderately-written brochure in favour of sterilization: "Some think that defectiveness is transmitted along Mendelian lines by a single recessive factor, or by a number of different factors. Others, such as Myerson, Devine and Tredgold, think that defectiveness is largely produced by toxins acting upon the spermatozoon or ovum or early embryo according to the so-called law of blastophoria."

Tredgold,[4] in a note published in *Mental Welfare*, says:—

"It is now generally recognized that the majority of cases are a result of 'inheritance.' It has consequently, not unnaturally, been assumed by those who have no great experience of defectives, and who are unacquainted with the subject of heredity, that the mentally defective child must necessarily be the offspring of mentally defective parents. It is of the utmost importance to realize that this is not so, and that the defect of a child may be due to inheritance without its parents being similarly defective. The explanation of this paradox lies in the nature of inheritance of these cases. Although some writers, chiefly in America, have attempted to prove that mental deficiency is due to the absence in the ancestral germ cells of certain definite constituents, and that transmission is in accordance with the laws formulated by Mendel, these attempts have been entirely unsuccessful. On the contrary, there is every reason

to conclude that mental defect is not due to the absence from the germ of a definite factor or series of factors; but that it is the expression of an impairment of developmental potentiality. In other words, it is due to a qualitative rather than a quantitative change; this change being in the nature of a germinal vitiation. There is reason to think, however, that the amount of this vitiation varies not only in the germ cells of different individuals of the same stock, but also in the germ cells of the same individual. Moreover, it is highly probable that even with vitiated germ cells the condition of the offspring resulting therefrom will be to some extent influenced by the nature of the ante-natal environment. The result is that, although the majority of mental defectives come of families whose germ cells have undergone vitiation, this change shows itself in many other ways than mental defect. In some individuals it may be manifest as dementia precox or other forms of dementia; in others as certain forms of insanity or mental instability. . . . Nevertheless, it is probable that all these classes of persons are 'carriers' of mental defect, and that a chance combination of adverse circumstances may at any time so embarrass the development of the impaired germ cells as to result in a mentally deficient offspring."

Again I may ask the question: Is mental deficiency the result of germ cells which are defective primarily or secondarily? Is the impairment of the germ cell due to defects inherited from one or both parents, or is it due to some damage to the germ cell after impregnation, or in the course of development? We do know that some diseases occurring in the developing

brain will cause mental defects, as, for instance, encephalitis lethargica. If mental defects are chiefly due to inherited defects, then sterilization should, theoretically at any rate, be of use in limiting the number of defectives in the future. If, however, mental deficiency is due to injury of the germ cells, or to developmental errors, then sterilization would be of no value. Sterilization is legal and has been practised in some of the American states, and the results, so far, have not been very encouraging. Shrubsall[5] states that "several lines of inquiry seem to show that only 5 per cent. of defective children are the offspring of defective parents, though even in these the parents were rarely of a mental status that would have permitted of certification even had they been subject to be dealt with. The proportion of those parents who were defective in one investigation was less than those who were called superior." Some authorities consider that there are no forms of mental deficiency which can be considered hereditary.

If, then, sterilization of the mentally unfit is to be approved, it seems clear that we must obtain much more information than we have at present. In fact, there are such differences among those who are best able to give considered judgments on this subject that we must at present agree that we are not in possession of sufficient evidence to form any opinion of value. We require much information before we can ask for legislation to give effect to sterilization. What, then, are the conclusions at which we must necessarily arrive ? First, we require and must obtain more knowledge as to the cause of mental deficiency than we have at present. Next, it must be clearly

pointed out to all the authorities that at its best sterilization can be of no use as an alternative to segregation, that no sterilization will do away with the need of institutional treatment and efficient guardianship, and that whatever range of sterilization may be permissible in the future, the amount of money spent on the segregation of mental defectives cannot be reduced, but will have to be increased. This will be increasingly clear when it is fully understood that a large percentage of recidivists are of the mentally defective classes—persons who are unable from mental defect to lead useful lives outside institutions, and almost perforce take to criminal lives.

Of course, if we choose to adopt quite a different attitude (as we are at liberty to do) we may say quite logically: We consider that we should permit and try to enforce sterilization on all degenerates whether mental or physical, and thus prevent the breeding of the large masses that at present bring numbers of undersized, under-intelligent and criminal persons into this world only to be kept at the expense of those who are not degenerates. For there can be but little doubt that at present we are helping to bring about a course that is contrary to nature, the survival of the unfit. This would mean such a wholesale sterilization that the public would not for one moment hear of it, as so many would be honestly wondering if their own turn would not be coming next. It is not within the range of practical politics.

I will close by reading to you the resolution passed by the Executive of the Central Association for Mental Welfare in London, a resolution with which I agree :—

"That they are of opinion that there are certain selected cases of mental defect in which sterilization might be an appropriate and desirable procedure; if there is any doubt as to the legality of the operation in such cases, the Committee are of opinion that the Association should favour legislation to admit of such selective sterilization, provided that adequate safeguards can be devised to prevent its improper use and to restrict its performance in such cases.

"That in regard to the question of the wholesale sterilization of defectives as a means of greatly reducing the incidence of mental deficiency, the Medical Committee know of no evidence in support of this, and see no reason for altering their opinion that such would be attended with comparatively insignificant results."

DISCUSSION.

Dr. R. J. A. BERRY, in opening the discussion, congratulated the Society on having three members on the B.M.A. Committee for Mental Deficiency. He stated that he had been very favourably impressed by the way in which the results of sterilization in California had been stated in *Sterilization for Human Betterment*. He did not think that sterilization would stamp out mental deficiency, although he had no doubt of the strong hereditary factor in its causation, and he thought sterilization would do little to prevent feeble-mindedness. This question is one of the greatest problems of the modern state, and all methods so far employed to check its increase had failed. He would like to see the medical profession given the right to

perform sterilization under conditions determined by the State. He felt that females were more dangerous than males when not under control, especially those of high or medium grades of mental deficiency.

Mr. C. F. WALTERS considered that the question was not, "Dare we perform sterilization?" but rather "Dare we not?" He thought that the first step was to educate the medical profession to a knowledge of the influence played by heredity, by means of discussions in all medical societies, and then the lay public should be similarly educated. In his opinion the first duty of medicine was to the race, and not to the individual.

Dr. J. R. CHARLES said that in his capacity of medical visitor to Stoke Park Colony he found that nearly every case of mental deficiency that he saw gave a strong family history. He found the question of letting patients free from control a very responsible one, and he did not think that sterilization would do away with the need of institutional treatment, since the liberation of large numbers of sterilized mental defectives would soon result in a large increase in venereal disease.

Dr. J. O. SYMES considered that the certification of mild degrees of mental deficiency was very difficult, and he thought that if sterilization was involved in certification it would make the certifying officers chary of labelling a child mentally defective unless the case was extreme. Moreover, these extreme cases needed care and supervision, so that in these cases sterilization was superfluous. He did not agree that there was a large element of heredity in the etiology of mental deficiency, but thought that a lot of the trouble was environmental in origin, many of the children being

illegitimate and brought up in institutions where they lived very difficult and cramped lives. In better class families he found no hereditary history of the condition, and the cases were regarded as freaks in the family. Why should mental deficiency be singled out for sterilization any more than any other physical defect ? Finally, he considered the great objection to sterilization was the sentimental one.

Dr. R. G. GORDON regarded voluntary sterilization as a very foolish idea, as the only result would be an increase in venereal disease. If the profession considered sterilization justifiable, he urged them to go all out for it, and to drop such half measures as voluntary schemes. He personally did not approve of it, as he did not see how it could in any way lessen the need for institutional treatment.

Dr. H. H. CARLETON, while agreeing with the hereditary factor in mental deficiency, thought that this factor was probably a Mendelian recessive, and that the original delinquent was now far back in the common stock ; so that he regarded sterilization at the present time as merely pruning the periphery.

Dr. A. G. MORISON quoted figures showing that in mentally defective families only 33 per cent. of the children were mentally deficient, so that in order to prevent 100 cases of mental deficiency 200 normal children would have to be sacrificed. He thought that sterilization would be very slow in its effects.

Dr. W. R. DAWSON found a larger incidence of mental deficiency in the lower grade schools, and he thought that while the majority of cases were hereditary all were not. Sterilization might prevent the birth of a certain number but by no means all, and in any case

institutional treatment would be necessary for life. He considered that the Scotch method of boarding out these cases merited consideration.

Dr. A. M. B. MILNER thought that possibly creative evolution, as taught by Bernard Shaw, might counteract the Mendelian factor in the inheritance of mental deficiency.

Dr. F. BODMAN stated that the country was grossly over-populated, and that better than sterilization would be the discovery of a fool-proof method of contraception.

Dr. PRESTON KING did not doubt the hereditary element in the causation of mental deficiency, and thought that breeding from defective stocks should be avoided. He suggested that sterilization should apply to all cases well enough to be discharged from institutions.

Dr. BRISTOWE, in reply, agreed that sterilization could never replace segregation.

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TETANY FOLLOWING THYROID OPERATIONS.

BY

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TETANY following thyroid operations may be a rare complication. Yet Crile [1] states that every surgeon who has had any wide experience with thyroidectomy is but too familiar with the symptoms of parathyroid deficiency. He reports on five cases. Dunhill [2] has had two cases. Von Eiselsberg [3] reports thirteen cases in 1,157 operations for goitre.

In England very little attention has been given by the clinician to this complication, in spite of much experimental work. Of the textbooks, some ignore it, others merely say it is rare; one book goes so far as to say that it is practically unknown after operations properly performed. This is not very helpful to a surgeon when faced with a case. It is possible that this outlook has prevented some surgeons from publishing their cases. It may also be the reason why cases have been described, not by the operator, but by a medical colleague. The fact remains that tetany, associated with goitre operations, does occur. It is therefore in the interest of the patient to discuss its prevention and treatment.

The cases about to be recorded number five. They occurred among 425 thyroidectomies. These five cases followed goitre operations, at the Bristol General Hospital, during the last seventeen years.

The years were 1914, 1916, 1921, 1926 and 1930. Each case was operated on by a different surgeon. Four of the cases were females. The remaining case in a male is unusual. Crile states that he has never seen it occur in the male. The patients' ages were 18, 47, 36, 14 and 30.

Type of Operation and Specimen Removed.

Case.	*Scope of Operation.*	*Nature of Specimen Removed.*
1.	Both lobes of thyroid removed. Isthmus left.	Cystic adenoma.
2.	Total thyroidectomy.	Multiple adenoma with calcareous degeneration.
3.	One lobe had been removed eleven years earlier. Wedge resection of remaining lobe now done.	Parenchymatous goitre.
4.	Wedge resection of two-thirds of each lobe.	Adenoma; no parathyroids found in specimen.
5.	Hemithyroidectomy.	Multiple adenomata.

The above table shows that the amount and method of removal differs in each case. It is difficult to condemn all these operations as not being properly performed. The operators were all full surgeons of the Hospital, and therefore not inexperienced in technique. On account of the more radical nature of the excision required, we should expect tetany to be more frequent after operations on exophthalmic goitre or malignant growth. Yet in none of these cases was hyperthyroidism a marked feature, and pathologically four were adenomatous and one parenchymatous. But tetany is not confined to the above types of operation.

C. H. Mayo[4] reports a case following enucleation of cystoadenomata. One of Von Eiselsberg's[3] patients had tetany after ligature of the four thyroid arteries.

Although tetany cannot always be avoided, every precaution must be taken to diminish the risk of its occurrence. First, complete removal of the parathyroids should be avoided, by doing only a partial or subtotal thyroidectomy. Berry[8] considers total thyroidectomy to be an unjustifiable operation. Even with this precaution we cannot be certain. Cases 3 and 4 were wedge resections and in Case 5 only one lobe was removed. Yet Du Bois has removed two normal parathyroid glands, from a patient with osteitis fibrosa, without producing tetany.

Can we explain the occurrence of tetany in these cases as resulting from irregular distribution of the parathyroids? Wellbrook,[5] examining 1,056 bodies, found supernumerary parathyroids in 7·7 per cent. These supernumerary glands may lie on the anterior surface of, or on the isthmus of, or embedded in the substance of, the thyroid. I can find no record of the percentage of cases in which the glands are absent from their normal position.

Secondly, the parathyroids lie in pairs near the distribution of the branches of the inferior thyroid arteries and are supplied by these vessels. Tetany may be due to crushing by artery forceps or by tying off this blood supply. Halstead, to avoid this, advises ligaturing the branches inside the capsule of the thyroid.

Thirdly, we have destruction of the parathyroids by scar tissue. This appears to be the most serious cause, as the parathyroids may be permanently destroyed, leading to chronic tetany. It usually follows from a second or third operation. There is a

long interval after operation before tetany sets in. Thus in the case quoted by Aub, symptoms did not start until two months afterwards.

Symptoms.

The onset of tetany may occur from six hours up to four months after thyroidectomy. In these five cases it started at 12 hours, 24 hours, 24 hours, 7 days and 3 days respectively after operation.

There are two stages in the symptoms of tetany. The most acute phase, with spasm of the limbs, is obvious. The elbows and wrists are flexed and the hand pronated. The thumb is opposed to the palm, the knuckle joints are flexed, and the other finger joints extended, forming the so-called "accoucheur's hand." In the lower extremities the hips and knees are kept extended, the feet and toes being in plantar flexion. The distribution of the contractures varies in different cases. Thus in Case 1 the left foot, but not the right, was affected. In Case 4 the right hand was more affected than the left. In Case 5 the contractures in the feet did not start until some hours later than in the hands. Severe pain is complained of.

In the alternate phase there is no pain. The patient complains of a feeling of discomfort, of pins and needles, of stiffness and weakness, expecially in the forearm or calf. These are warning symptoms that the neuro-muscular system is in an irritable state.

That these symptoms are genuine may be supported by various signs. Chvostek showed that tapping the facial nerve set up spasm of that side of the face. Trousseau activated the latent spasm in the extremities by applying compression to the proximal end of the limb. Hoffman, by pressing over the nerve trunks,

for example the ulnar at the inner side of the elbow, produced severe pain, thus demonstrating that the sensory nerves were also affected. Erb showed irritability of the motor nerves by applying the galvanic current. This gives a greater closing contracture at the anode than at the cathode.

Apart from a warning of the onset of the more acute stage, these signs are of importance as showing the necessity of continuing treatment and avoiding relapses.

Treatment.

(*a*) *Calcium.*—In 1909 MacCallum first showed experimentally that hypocalcæmia was associated with parathyroid tetany, and that injections of calcium into the blood relieved the muscular spasms. With regard to dosage by mouth, Hunter[6] advises up to 30 grammes daily. In normal individuals the rise in blood-serum calcium, after a dose of 10 grammes, is only 14 per cent. Hunter was able to control the blood-serum calcium of his patient, who had suffered from chronic tetany for twenty-two years, by giving 10 grammes of calcium daily. If the symptoms are severe, with laryngeal spasms or convulsions, he advises intravenous injection of 20 c.c. of a 5 per cent. solution of calcium chloride. Aub states that similar intravenous doses will relieve other types of spasm, such as renal or gallstone colic.

Four of the cases in my series were treated with calcium.

In Case 1 calcium lactate 60 grains was given by mouth four-hourly. The painful spasms ceased in three hours. Contractures of the hands lasted fifteen hours.

In Case 2 calcium lactate 20 grains was given by

mouth thrice daily. This patient also had thyroid extract 1 grain twice a day. Contractures of hands lasted several days, but the patient was fit to go home on the fourteenth day after operation.

In Case 4 calcium bromide 10 grains was given by mouth thrice daily. The patient had completely recovered by the end of five days.

In Case 5 intramuscular injection of calcium chloride 1 grain relieved the pain for forty minutes, but the contractures were still present. The injection was repeated three hours later, parathyroid 1 grain also being given by mouth. Relief followed for another four hours, when painful spasms returned. An intravenous injection of calcium chloride 2 grains, with a subcutaneous injection of parathyroid 1/10th grain, was then given. Pain was relieved in forty-five minutes. Calcium lactate 30 grains, and parathyroid 1 grain, were given four-hourly by mouth, and continued for seven days. All symptoms had ceased by the sixth day from the onset.

The doses by mouth in the above cases varied from 30 to 360 grains daily. These cases show that the pains can be controlled whether the calcium be given by mouth, intramuscularly, or intravenously. Case 5 shows that, as we should expect, the intravenous route gives relief more rapidly.

(*b*) *Parathyroid.*—In 1896 Halstead attempted to treat tetany with sheep's parathyroid. In 1924 Collip[7] demonstrated that the active extract of parathyroid, when taken by the mouth, is rendered inert by the digestive juices. He therefore isolated an active extract, or hormone. This extract also is destroyed by trypsin and pepsin. It is therefore given subcutaneously. He showed experimentally that his parathormone, thus given, produces a rise in

the blood serum calcium level. As an overdose may cause hypercalcæmia, the dosage must be controlled, by estimating the blood-serum calcium.

Hunter[6] has shown experimentally the results of parathormone therapy. He performed total thyro-parathyroidectomy on a dog. The animal had violent tetany in sixteen hours after operation. An intramuscular injection of fifteen units of parathormone was then given. Within three hours the dog became normal, and the tetanic symptoms had all disappeared. Hunter states that more severe cases of tetany require parathyroid extract in addition to calcium. Crile[1] reports the treatment of five cases of acute post-operative human tetany by parathormone. Relief of their symptoms was experienced within twenty minutes, after an intravenous injection of 1 c.c. of Collip's parathormone. Three doses of 2 c.c. to each case resulted in complete recovery.

In my series parathyroid was only given in one case, and was then combined with calcium.

Another method of giving parathyroid is by re-implanting the parathyroids, removed at the operation, either into the sterno-mastoid muscles or into the rectus abdominis. The results have not been wholly satisfactory. It is not always easy to find these small bodies measuring six by four millimetres. Lisser and Shephardson[9] grafted parathyroid from another patient into the rectus. Five months later, at post-mortem, no remains of the graft could be found.

If parathyroid extract merely acts by drawing calcium from the bones, what advantage has it over direct calcium therapy? Chiefly in cases of chronic tetany, which fail to respond to calcium. Chronic tetany differs from the acute form, not so much in

its onset, as in its progressive character. The symptoms are similar to acute tetany, but in addition pharyngeal, laryngeal, and bronchial spasms may supervene, accompanied by convulsions and epileptiform fits. The symptoms may persist for years ; in Aub's [6] case for nine years, and in Hunter's [6] case for twenty-two years. Opacities of the lens may develop, leading to cataract.

As none of my cases had chronic tetany, I venture to quote from other clinical sources.

Lisser and Shephardson's[9] case of chronic tetany followed the removal of a large adenomatous goitre. At operation only a minute portion of thyroid tissue was left over the isthmus. Presumably all the parathyroids were removed at the time of operation, as three were found then in the specimen, and at the post-mortem no further parathyroid tissue was found.

Although this patient was given calcium lactate 3 grammes daily by mouth, tetany still occurred, but was controlled for the time being by Collip's parathormone. Unfortunately, the dose required to be steadily increased. Starting with 12 units, by the end of eight months 100 units were required. The dose was finally raised to 160 units a day. Epileptiform attacks occurred, and the patient died of staphyloccal sepsis at the end of a year.

Aub's [6] case of chronic tetany was in a girl aged 17, with hyperthyroidism. Two operations were performed within a year, constituting total thyroidectomy. Tetany started two months after the second operation. Nine years later this patient still had tetany, and the blood-serum calcium was only 4·3 mgm. per 100 c.c. Fifteen units parathormone given daily raised the blood-serum calcium to 6·7 mgm., and attacks ceased. The effects of parathormone gradually diminished in spite of

raising the dose to 100 units. Tetany associated with bronchial and laryngeal spasm and unconsciousness supervened, from which the patient died.

Thus in both these cases the primary success with parathormone was later counteracted by the patient's tolerance.

(*c*) *Thyroid.*—Aub[6] and his co-workers claim to have shown that the thyroid hormone stimulates calcium excretion more than parathyroid extract. In their case of post-operative tetany, treated with thyroid extract by mouth, and thyroxin intravenously, the blood calcium in two weeks rose from 6·7 to 11·9 mgms. per 100 c.c. This rise was maintained for six weeks after treatment had been stopped.

In Case 3 of my series thyroid extract 5 grains was given by mouth daily. The spasms ceased in five days, but were intermittent during this period. The patient was able to go home on the eighteenth day after operation. No other treatment was given.

Hunter's[6] experiments on animals do not fully support Aub's case. He performed total thyro-parathyroidectomy on cats and dogs. He then gave each animal the smallest dose of parathormone to keep it free from tetany, and injected thyroxin. As a result all the cats died of tetany. The dogs survived, but the blood-serum calcium dropped and tetany reappeared ten days after the thyroxin had been given. The advisability of using thyroid to treat tetany is, therefore, still an open question.

CONCLUSIONS.

1. Tetany may follow thyroid operations, whether properly or improperly performed.

2. In the majority of cases the symptoms can be cured by calcium.

3. In the remaining cases the addition of parathyroid or thyroid is helpful, but further experimental work is still required.

In conclusion, I wish to thank my colleagues at the Bristol General Hospital for their cordial assistance in the preparation of this paper.

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A CASE OF CONGENITAL OBSTRUCTION OF THE BILE-DUCT.

BY

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THE following case, recently under our observation at the Children's Hospital, presented features which deserve report.

Diagnosis and Clinical Course.—Dr. Milling, to whom we are indebted for the opportunity of observing this baby, told us that the labour was normal. There were no convulsions, rashes or snuffles. The weight at birth was 8½ lb. The usual post-natal icterus did not, a few days after birth, entirely disappear. It was thenceforward replaced by a jaundice becoming deeper in tint, and an enlargement of the liver presented itself.

On admission to hospital, at the age of 4 months, the child weighed 10 lb. 12 oz. She appeared comfortable, in a fair state of nutrition. She was moderately jaundiced to a greenish-yellow hue. She took her feeds of ordinary diluted citrated milk well, without abnormal vomiting. There were two or three motions a day. The stools were absolutely white, of a dried powdery curd consistency. The upper abdomen

was prominent; the liver easily palpable, firm, rather finely nodular, with a rough, well-marked edge at the umbilical level. The splenic tip could just be felt.

Clinically, congenital obstruction of the bile-duct seemed the only and obvious diagnosis. There were no features of congenital syphilis, and the Wassermann reaction, though perhaps somewhat unreliable at this age, was negative. There was no reason to believe there was cystic or neoplastic pressure on the bile-duct from without; there was no obvious irregularity of the liver surface; calculous or parasitic obstruction of the bile-duct seemed unlikely. The jaundice was more intense than one expects in congenital acholuric icterus; moreover, the hepatic enlargement preponderated over that of the spleen, whereas the reverse is the case in this disease. The Van den Bergh reaction was positive, direct and indirect.

As time went on the jaundice became more marked during the ensuing five weeks, varying in intensity as is usual in these cases. There were remissions in the enlargement of the liver, but in the long run its size increased. Ultimately the lower edge reached the level of the iliac spine. During this time the spleen became more easily palpable. There were, however, no corresponding alterations in the stools, which retained their unblemished whiteness. The abdominal circumference over the liver was $18\frac{3}{4}$ inches, at the umbilicus $16\frac{3}{4}$ inches. (Normally it is about 14 inches in a child of this weight.)

There was a loss of 8 oz. in weight. Nevertheless, the remarkable features appeared to be the absence of constipation and vomiting, the drowsy comfort and vitality of the child. As is usual in deeply-jaundiced infants, there was not the itching or bradycardia so common in icteric adults.

The general condition was still fairly good, but slowly and steadily deteriorating. There were no cutaneous or gastric hæmorrhages.

The prolongation of a fairly intense jaundice in an infant, with the persistent absence of features suggesting any other

cause of obstruction, appeared rather to confirm its congenital ætiology. Moreover, a simple catarrhal jaundice should have passed off in a week or so. This being so, it seemed appropriate to consider whether it was possible surgically to short-circuit the obstruction.

Operation.—At laparotomy the large liver was found very firm, lacking in surface smoothness and of greenish-black hue. Beneath it, in the normal situation, was a large, sessile, thickened gall-bladder. This tended to be sacculated towards the neck, where abnormality of the ducts was apparent. The fixity of the liver and the weak state of the infant prevented any search for the ducts.

A miniature cholecystgastrostomy was attempted and found to be just feasible. The chief hindrances were the leathery state of the walls of the gall-bladder and the fixity and downward projection of the liver. The patient rallied from the operation, but sank gradually and died a few days later.

Post-mortem Examination.—The examination showed an effective anastomosis through which a catheter passed easily. There was no escape of bile and no peritonitis. The biliary ducts were found to be dilated and remarkably tortuous, so that it was impossible to define exactly the representatives of the hepatic, cystic and common bile-ducts. There was no communication with the duodenum. The pancreas and other organs appeared normal.

Remarks.—Where congenital jaundice is attributed to stenosis of the ducts, operation affords the only hope of succour. Once the infant's hold on life is satisfactorily established then the progress of its nutrition determines the time for surgical intervention. This should take place as soon as the weight and general health reach a stationary point. To defer it means physical deterioration from increasing biliary

back-pressure and greater technical difficulty owing to intensified cirrhosis.

Conclusion. — We consider a short-circuiting operation at the age of election, about 2 to 3 months, is feasible and affords a reasonable hope of a successful issue. There is, moreover, no alternative way of avoiding deterioration of health and early death.

Reviews of Books

Tuberculosis: its Treatment and Cure with the help of Umckaloabo. By an English Physician. Pp. v., 153. London: B. Fraser & Co. 1931. Price 3s. 6d.—This records an investigation of the claims of Umckaloabo, manifestly with the co-operation of the proprietor, though we are not told at whose expense. The anonymous author "happens to be the medical adviser to a great London newspaper," nevertheless he displays such a positively childlike innocence in his account of the origin and properties of this mysterious root as proclaims him an ideal subject for "crural extension." Records are given of fifty-five cases, including forty-six of pulmonary tuberculosis. We are not told how they were selected, so it is fair to assume that they represent the best out of some 9,000. The cases are numbered, though on what system is obscure; No. 3,167 began treatment in 1911, 7,398 in 1912, 203, 1,904, 6,650 and 7,622 in 1913, 3,095 in 1919, 155 in 1921, 7,065 in 1922. There is no obvious order in their presentation, but close scrutiny brings to light the interesting fact that the first fifteen include twelve with "positive sputum," although the remaining forty show only nine "positives," and of these two had ceased to be positive before starting treatment. As regards the remainder, we are not impressed by such claims as "she had already been certified as having pulmonary tuberculosis, so there *can be no doubt whatever* of its existence." (Page 104.) Nearly every case had had sanatorium treatment with dispensary after-care, etc. In many, five, ten, even thirteen and fourteen years had elapsed between onset and commencement of Umckaloabo treatment. Each case was "examined" once only, often many years after the "cure" had been completed. The book is obviously intended to appeal to the ignorant and credulous; to the critical reader it is the most damning exposé of the futility of the "cure" it extols that has yet seen the light.

Encephalitis Lethargica. By CONSTANTIN VON ECONOMO. Pp. xvi., 200. 21 illustrations. London: Oxford University Press. 1931. Price 18s. This monograph represents the views of perhaps the greatest authority on the subject. It contains a complete historical survey, together with an

exhaustive discussion of the present position of experimental work on the virus of encephalitis. As regards the latter no finality is reached. The classification of the clinical types of the disease is a distinct advance on that found in current English text-books. The author gives a detailed account of recent histological work on the lesions of encephalitis lethargica. He makes a great point of the influence of the vegetative centres in determining modes of thought and conduct and he sees, as the result of his researches, the birth of a new psychology. Great stress is laid on the influence of these vegetative centres, notably a sleep centre, but the argument is obscured by a complete failure to discriminate between positive and negative symptomatology. It is impossible to make out, from the writer's account, which sleep disturbances are due to overaction of the sleep regulating centre and which are due to its destruction—one cannot have it both ways. A similar vagueness pervades the author's remarks with regard to stimulation or destruction of other regions of the brain affected by encephalitis. However, apart from these defects, the book presents the most comprehensive account of the disease available at the present time.

The Alcohol Habit and its Treatment. By WALTER E. MASTERS, M.D. Pp. 190. London: H. K. Lewis & Co., Ltd. 1931. Price 6s. The purpose of Dr. W. E. Masters in this brochure is to recommend to the profession the treatment of alcoholism by drugs, in conjunction with a stay in a voluntary home reserved for that purpose. Such a method, he conclusively shows, does give a permanent satisfactory result in a high percentage of cases. The book is full of novel and interesting information, the chapters on the types of alcoholism and the motives and predisposing causes being especially valuable.

The Medical Evidence before the Royal Commission on Licensing, 1930. By COURTENAY C. WEEKS, M.R.C.S., L.R.C.P. Pp. x., 153. London: National Temperance League. 1931. Price 1s. Dr. Weeks's summary of the evidence given by medical witnesses before the Royal Commission on Licensing, 1930, should be read by all practitioners of medicine. Particularly the facts should be taught to medical students, for there is growing up a generation of medical men who are becoming increasingly

careless and unscientific in the use of alcohol in the treatment of disease and as an ordinary article of diet. Although the summary is tinged with Dr. Weeks's well-known views on total abstinence, the question is fairly and frankly discussed. The chapters on the ill-effect of small doses of alcohol on all classes of skilled work, on alcohol in medical treatment and on its relation to child-life are particularly instructive. Dr. Salter's evidence on the social aspect of the question, founded on his experience in the Borough of Bermondsey, is a forcible reminder of the fact that the abuse of alcohol is still for a large section of the community a problem of vast dimensions and of utmost gravity.

Restoration Exercises for Women. By ETTIE A. HORNIBROOK. Pp. xi., 95. Illustrated. London: William Heinemann Ltd. 1931. Price 5s. This is an excellent but very expensive little book. It contains some dozen exercises which should be extremely useful to those troubled with constipation (and flat feet), if carried out diligently and in conjunction with the dietary given, which everyone might follow with advantage. It does not savour of crankiness as much as books of this type usually do. The diagrams are clear, the printing fair and there is a useful index, but the binding is shocking. The book is really a supplement to F. A. Hornibrook's *Culture of the Abdomen*, with which it might, with advantage, be re-issued in one volume at the same price.

Notes on Radium Therapy for Medical Students. By HECTOR A. COLWELL, M.B., Ph.D. Pp. xii., 165. Illustrated. London: H. K. Lewis & Co. Ltd. 1931. Price 6s. One can find but little fault with Colwell's *Notes on Radium Therapy*. The chapter on Physics is especially well written, and can be very easily understood by even the least mathematically inclined. It would be well, however, when this book is revised if on page 8 the more usual abbreviations of "kms" and "cms" are used instead of "kilos" and "cents." Although the writer states that the clinical chapters of the book are merely notes intended for final year students, they could be read with profit by all who want to know a fair amount about radium without actually wanting to specialize. The quotation of Birkett's figures in carcinoma of the tongue gives a rather misleading impression. These were not cures, but the percentage of cases clinically well at the end of a

year from the time of treatment. As Colwell says elsewhere, there are no cures in the sense of five year figures available for England. It is a pity that except in the chapter on carcinoma of the cervix very little mention is made of techniques other than the English, while a few words on the " Bomb " treatment, a little more about surface treatment, and a passing reference to radium therapy in neoplasms of the stomach, scrotum, and brain would have still further enhanced the value of this excellent little book.

Hay-fever, Hay-asthma. By WILLIAM LLOYD, F.R.C.S. Third Edition. Pp. vii., 124. Illustrated. London : Straker Bros. Ltd. 1931. The first edition of this book appeared in 1907 : the author has nothing startlingly new to say now, but what he does say is extremely valuable. He gives an adequate account of a very common and distressing complaint, its ætiology, and clinical and pathological manifestations. Emphasis is rightly laid on the importance of nasal treatment and on the equal importance of undertaking treatment early. The directions given are clear and adequate, and the case reports indicate how satisfactory is the prognosis. This book should certainly be in the library of every practitioner who does not know all about the cure of hay-fever.

Editorial Notes

The Queen Victoria Jubilee Convalescent Home.

It is difficult for some of us to realize that thirty-four years have passed since Queen Victoria's Diamond Jubilee; yet the fact that since its opening the Convalescent Home has treated nearly 50,000 patients reminds us of the long and valuable service that this institution has rendered. Although its work has been largely that of relief to the two great general hospitals—whence it has been able since 1920 to receive a certain number of cot cases—its usefulness is by no means limited to this. Many patients come direct from their own homes—a godsend to the man or woman trying to recover from an acute illness in the unhelpful surroundings of a cramped and overcrowded house. We venture to commend this possibility to the consideration of the general practitioners of Bristol and its neighbourhood, adding that these benefits are usually to be had for nothing, except in the case of a few patients who need to stay longer than the customary fortnight. From these a fee of a guinea for each extra week is required. On application to the Matron the requisite forms of admission will be forthcoming. Of these there are two; one, a simple guarantee of character to be signed by some responsible person; the other, a form of medical fitness (which is probably familiar to most Bristol doctors), excluding tuberculous, cardiac and infectious disease, to be signed by the practitioner in attendance.

Although persons are expected to be convalescent, and therefore not in need of active or elaborate treatment, they are safeguarded against the risk of unperceived relapse by the care of the nursing staff and by the daily visit of one or other of the medical officers. We repeat that for persons of straitened means recovering from acute illness or injury the quiet, orderly, open-air life of the Convalescent Home will often prove ideal.

* * * * *

The "Lancet" Commission on Nursing.

In December last the *Lancet* appointed a Commission to inquire into the reasons for the shortage of candidates for the profession of sick nursing, and to offer suggestions for making the service more attractive to suitable women. Two interim reports have now been published, of which the second appeared in the *Lancet* for 15th August. The questionnaire was sent out to 1,031 hospitals, of which 686 (or 67 per cent.) sent replies. From certain classes of hospitals the percentage of replies was low, notably tuberculosis hospitals and some groups of hospitals not wholly approved for complete training. It may not be unfair to guess that the conditions of service in the non-replying hospitals were not above the average. From the variety of explanations advanced by the replying hospitals it is evident that their managers are entirely ignorant of the true reasons for the shortage of nurses, and we venture to doubt whether of their own initiative our hospital managers are likely to be able to attract suitable women in large enough numbers to satisfy the demand for trained or even untrained sick nurses. A clear summary of the evidence is

given in this second interim report. The summary is presented without critical comment, and is a singularly fair account of what is demanded of the nurse herself and what is offered in return. The impression we have gained from reading the whole report is that a modern nurse is required to be capable of receiving an academic education little if at all lower than the pass standard for an ordinary B.A. degree as well as being trainable in a highly skilled handicraft, which is not an additional subject in any "pass" B.A. examination. Finally, she must possess an inexhaustible fund of patience and sympathy such as is not expected of doctors or even of ministers of religion themselves. We shall be interested to see how the *Lancet* proposes that hospitals shall obtain the nursing staffs they need.

Obituary

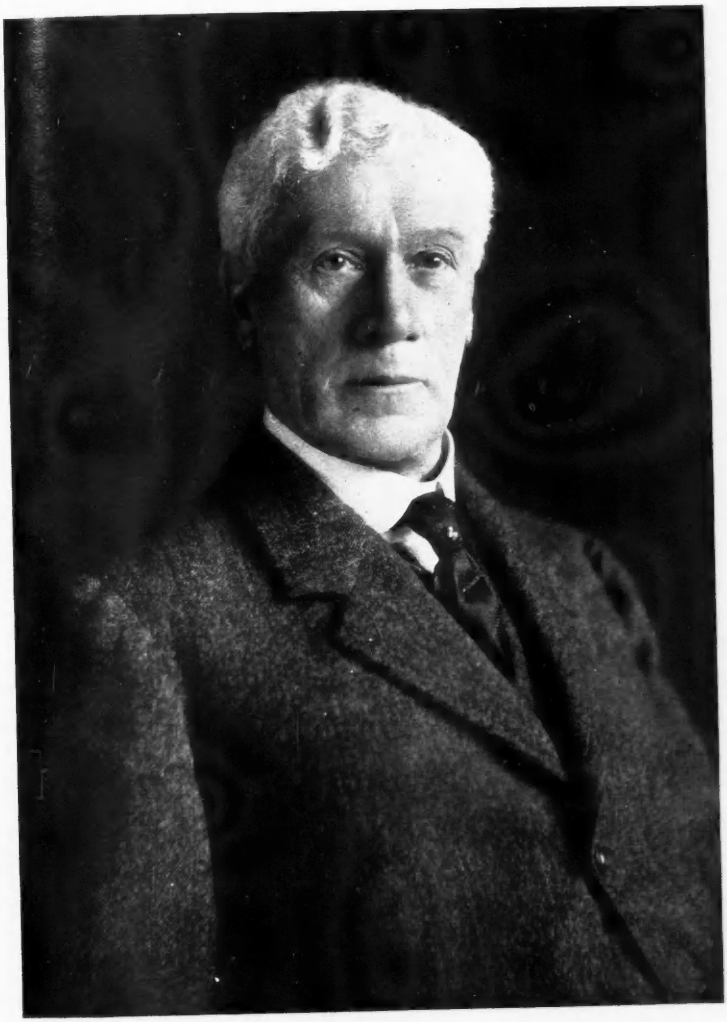
FRANCIS RICHARDSON CROSS, M.B. Lond., F.R.C.S. Eng., LL.D. Bristol, J.P.

THE death of Mr. Cross in his eighty-third year, on 12th July, brought to a close a life of strenuous work and noble enterprise. He was the eldest son of the Rev. Joseph Cross, Vicar of Merriott in South Somerset and formerly Precentor of Bristol Cathedral. He was educated at Crewkerne Grammar School and King's College Hospital, London. He took his Fellowship of the Royal College of Surgeons in 1878, and his M.B. (London) in 1879. He also attended clinics in Vienna, Berlin, Paris and Utrecht, and for some time worked as Clinical Assistant at Moorfields Eye Hospital. At King's College Hospital he held the posts of House Surgeon, Medical Tutor, and Sub-Dean.

Whilst working in London he became well known in the athletic world, winning the 100 yards in the inter-hospital sports in record time, and, we have been told, holding for that distance the amateur record for the year, a feat to which he sometimes referred with very natural pride.

It was in 1878 that he was invited to come to University College, Bristol, as Lecturer in Anatomy, and in the same year he was appointed Assistant Surgeon to the Bristol Royal Infirmary. A year later he became full surgeon, and in 1880 he was appointed Dean of the Faculty of Medicine at University College. Thus, to use his own expression, he had not been long in Bristol before he "got pitchforked into a lot of work."

Very shortly after this he turned his attention specially to ophthalmology. He became a member of the newly-formed Ophthalmological Society in 1881, and was a frequent contributor to its *Transactions*. In 1882 he was appointed Surgeon to the Bristol Eye Hospital. This institution, founded in 1810, had lapsed into a somewhat torpid state. Cross's energy and ability quickly made themselves felt. He soon became so busy both with his private and hospital work that he decided to give up general surgery. In 1885 he was appointed Ophthalmic Surgeon to the Bristol Royal Infirmary, a post



F. R. Cross.

which he occupied till 1900. Whilst studying in Utrecht Cross became friends with Professor Snellen, then one of the leading ophthalmic surgeons in Europe, and it was his son, the late Professor Herman Snellen, who in 1889 was appointed the first House Surgeon to the Bristol Eye Hospital.

In 1891 Cross was elected President of the Bristol Medico-Chirurgical Society. The subject of his presidential address was "Progress in Medicine; local and general," in which he stressed the need for special departments in all large hospitals. Amongst other varied and distinguished positions he held may be mentioned Lecturer, afterwards Reader, in Ophthalmology in the University of Bristol and President of the Ophthalmic Section at the British Medical Association meeting in Bristol in 1894. In 1898 he was elected a Member of the Council of the Royal College of Surgeons, and at the same time was Sheriff of Bristol. He delivered the annual oration at the Medical Society of London in 1901, the Bradshaw Lecture at the Royal College of Surgeons in 1909, the Long Fox Lecture in Bristol in 1915, and the Doyne Memorial Lecture at the Oxford Ophthalmological Congress in 1920. Besides all these engagements he was President of the Grateful Society in 1889, of the Dolphin Society in 1912, and of the University Colston Society in 1916, and was appointed a Magistrate in 1902. In 1914 he was elected President of the Ophthalmological Society of the United Kingdom, and many will recall the admirable way in which he conducted the meetings—courteous, friendly, alert and sympathetic; in every respect an ideal chairman.

After the tragically sudden death of his wife in 1920 the inevitable anxiety of active practice seemed to weigh more heavily, and to some extent he gave up operating—not that his skill was failing, but because he became unduly concerned about his patients, even though they might be making a perfect recovery. In 1925 he resigned his appointment as Surgeon to the Eye Hospital after more than forty-three years strenuous work. One of the last operations he performed there, shortly before his resignation, was the formation of an artificial pupil in a case of widely adherent leucoma. The case was a difficult one with an extremely shallow anterior chamber. He used a keratome and a Tyrrell's hook and performed the operation with the skill and precision of a man in his prime. He had always been a quick and resourceful operator, perhaps lacking the extreme delicacy of manipulation shown by some

few of the masters of the art, but he was exceptionally successful. At one time he was a strong advocate of the removal of the lens in patients suffering from a high degree of myopia, and his results were very good, but in later years he rarely resorted to this operation. He was ready to undertake most of the newly-suggested operations, and it is rather remarkable, therefore, that he never adopted the operation of trephining for glaucoma.

Cross was a lover of the country and of country life, and for many years hunted with the Berkeley and the Duke of Beaufort's hounds, but in his busy life he had little leisure to indulge in these pursuits; his thoughts were always centred on his work or his civic and social duties. He had nothing but praise and admiration for research, but had himself no time to devote to it. When time allowed he studied ophthalmic literature, and he had a happy knack of picking out and using what was of practical value.

In various educational movements in Bristol he took an active part. For many years he was on the Council of the University and of Clifton College. He also was deeply interested in the cathedral and its services. In 1921 he joined with Dean Burroughs in initiating the annual service for the medical profession, held on the Sunday nearest to St. Luke's Day.

Like many other ophthalmic surgeons, Cross was alive to the lamentable wastage of sight owing to ophthalmia neonatorum and other preventable causes. From the first he took an active interest in the welfare of the blind. In 1901 he joined the Committee of the Bristol Blind Asylum (the Royal School of Industry for the Blind), then situated at the top of Park Street on the site of the present University buildings. He was largely instrumental in the extension and development of that Institution and the removal of the school to its present comparatively rural position at Westbury-on-Trym. He became Chairman of the Committee in 1913, and was elected President in 1921. One of his last activities in public life was at the end of September, 1930, when the Duchess of Beaufort opened Southmead House as a hostel for the senior boys at the school. The ceremony took place in the garden ; and none of those present on that sunny autumn afternoon who heard his interesting résumé of the history of the Blind Asylum, will readily forget his fine, upright figure, the wavy silver-white hair, the clear and pleasant voice, and the confident self-possession which was always his characteristic as a speaker.

Almost to the very last he took an active interest in the affairs of the Bristol Eye Hospital. He attended the monthly meeting of the committee shortly before his death. His portrait, painted by Miss B. Bright in 1920, is in the senate room at the University, and a replica of it hangs in the hall of the Eye Hospital, the institution which he rescued from obscurity, and to which he devoted so large a portion of his life. It is here, where he was so well known and valued, that he will, perhaps, be longest remembered; and where, when those who owed to him so much are long since dead, his example and his name will live.

C. H. W.

The Medical Library of the University of Bristol,

WITH WHICH IS INCORPORATED

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the list in June, 1931.

	October, 1931.
British Medical Association (1)	1 volume.
College of Physicians of Philadelphia (2) ..	1 ,,
Mrs. E. S. Griffiths (3)..	5 volumes.
Prof. E. W. Hey Groves (4)	7 ,,
Mr. W. E. Marsh (5)	20 ,,
Mayo Clinic and Mayo Foundation (6) ..	1 volume.
Michell Clarke Memorial Fund (7)	5 volumes.
Dr. George Parker (8)	2 ,,

Unbound periodicals have also been received from Professor E. W. Hey Groves.

THE ONE HUNDRED AND THIRTY-SEVENTH LIST OF BOOKS.

The figures in round brackets refer to the figures after the names of the donors. The books to which no such figures are attached have either been bought from the Library Fund or received through the *Journal*.

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Surgical Clinics of North America. June, 1931		1931

Local Medical Notes

EXAMINATION RESULTS.

University of Bristol.—Students of the University have recently passed the following examinations :—

M.B., CH.B.—*First Examination. Pass :* R. D. Cæsar, Monica L. Hawkins, E. J. Lace, J. S. W. Little, Coralie W. Rendle-Short, L. A. Schnipelsky, A. M. Spencer, E. Want, E. L. Ward, P. Zimmering. *In Botany (Completing Requirements) :* V. T. Baxter, J. G. Field, A. W. Woolley.

B.D.S.—*First Examination. Pass : In Botany (Completing Requirements) :* J. W. E. Snawdon.

L.D.S.—*Preliminary Science Examination. Pass : In Biology (Completing Examination) :* R. E. Buchan, Frances M. Orton.

Conjoint Board.—M.R.C.S., L.R.C.P.—*In Chemistry :* J. T. S. Hutchins, B. E. Ffrench. *In Physics :* J. T. S. Hutchins, Mabel L. Glenny, Gwyneth M. Griffiths. *In Elementary Biology :* B. E. Ffrench, Mabel L. Glenny, Gwyneth M. Griffiths, J. A. Cochrane, P. W. M. Martin. *In Anatomy :* L. E. Sealy, C. F. Rivington. *In Physiology :* C. F. Rivington, T. H. Taylor. *In Pharmacology and Materia*

Medica: R. H. Moodie. *In Pathology:* J. J. Kempton, G. M. Evans. *In Medicine:* L. C. Holland.* *In Surgery:* D. Johnson.* *In Midwifery:* A. M. Davies, Enid A. Taylour, J. J. Kempton.

L.D.S., R.C.S.—*Part II. Pass:* T. A. A. Eaves, W. U. Harwood.

Long Fox Memorial Lecture.—The Lecture for 1931 will be delivered on 27th October at the University at 5.0 p.m. by Mr. A. L. Flemming, who will take as his subject "The Partnership between Anæsthesia and Surgery."

The British Association of Dermatology and Syphilology held its Annual Meeting in Bristol on 2nd and 3rd July, under the Presidency of Dr. Kenneth Wills. The subjects under discussion comprised: "Pityriasis Rosea," introduced by Dr. Sydney Thompson and Dr. G. H. Percival; "Hyperglycæmia in Skin Diseases," by Professor Rost of Freiburg; "Erythema Nodosum," by Dr. J. O. Symes; "Gastric Secretion in Psoriasis Vulgaris," by Dr. W. Dyson; "Lichen Urticatus," by Dr. Rupert Hallam; "A survey of modern development in Leprosy work, with an appreciation of the present position," by Dr. Robert Cochrane; "Observations on the deposit of Gold in the skin," by Dr. Wigley; "Autohæmotherapy," by Dr. Norman Burgess. The meetings were well attended, and the Annual Dinner was held at the Victoria Rooms on 2nd July, and various excursions were carried out.

* Qualified.